



# The performance of 1m Aperture SLR Telescope of Wuhan JFNL SLR station

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The first SLR ranging data was obtained on September 29, 2018 at JFNL SLR station. The pointing accuracy and satellite tracking accuracy of the telescope are 2 arc second and 0.3 arc second (RMS value of O-C) respectively. The accuracy of target calibration is less than 8mm, and the single ranging accuracy of Lageos satellite is less than 10 mm. The normal point data and full rate data are uploaded to EUROLAS Data Center (EDC) from July 2, 2019, and more than 900 passes has been uploaded until now.

## Introduction

### JFNL SLR Station (7396)

Telescope aperture: 1m

Single ranging accuracy (Lageos) : 8mm

Range Distant : 400~40000km

target calibration : 8mm

Repetition frequency: 1kHz

Tracking Precision : 0.3 arc second

Site: 30.5156853N 114.490195E 77.365



## Hardware



Ranging controlling equipment



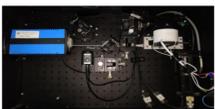
1kHz laser



Target on telescope



C-SPAD



Receiver System

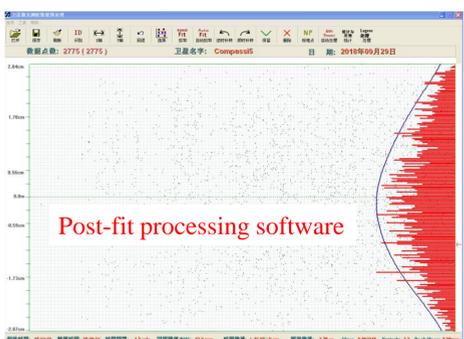
## Software

**Ranging controlling software:** telescope controlling, data identification, pointing tuning, ranging satellite selection and so on.

**Post-fit processing software:** Ranging data post-fit, Generating CRD file(NPT and FRD), Statistic analysis (range and time bias, rms, skew and so on).



Ranging controlling software



Post-fit processing software

## Data Quality

The ranging precision of JFNL SLR (73964701), which is from Analysis Standing Committee of ILRS, is shown in figure.1. Only 8 acceptable passes of Lageos2 has obtained by JFNL SLR station, so we will put the Lageos2 tracking on higher priority for better coordinates estimation and final validation.

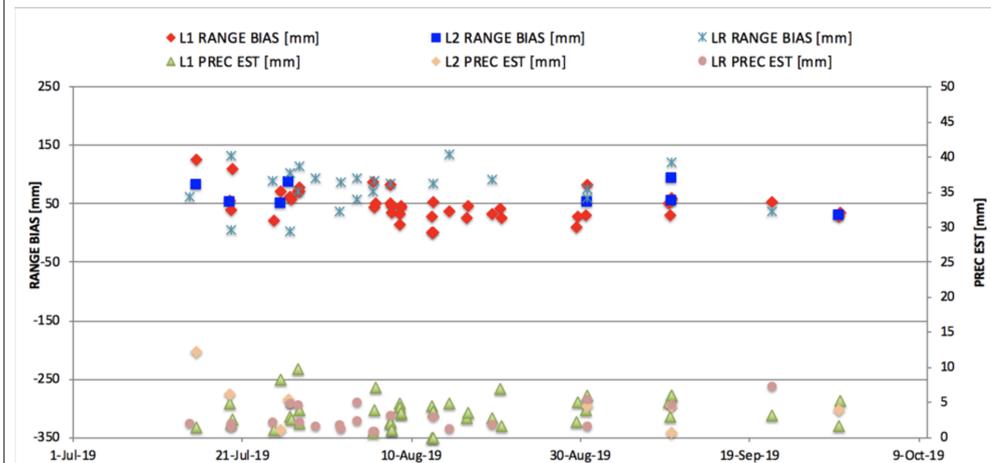


Figure.1 The rang bias and prec est of Lageos1, Lageos2 and lares satellite

Table I . Statistic parameters of Lageos1, Lageos2 and LARES

Satellite	Parameter	PREC EST (mm)	RANGE BIAS (mm)
Lageos 1	Mean	3.8	50.3
	STD	2.1	24.5
	RMS	4.2	54.5
Lageos 2	Mean	4.8	63.3
	STD	3.6	22.1
	RMS	5.8	66.6
LARES	Mean	2.9	78.4
	STD	1.8	34.5
	RMS	3.3	85.4

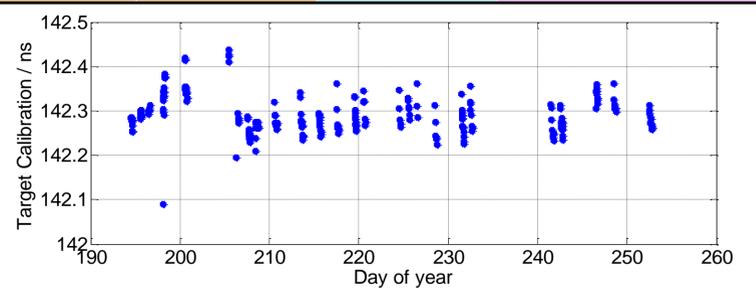


Figure.2 target calibration



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